June 3, 1999

Iowa Department of General Services
Hoover State Office Building
Des Moines, Iowa 503 19-0102

Attention: Mr. Craig Deichmann

Subject: Fort Madison Penitentiary Electrical System Upgrade.

PURPOSE

Several factors reduce the reliability of a facility's electrical power system. As soon as equipment is installed, a process of normal deterioration begins. Unchecked, the deterioration process can cause equipment malfunction or an electrical failure. Deterioration can be accelerated by factors such as hostile environment, increased temperature or severe duty cycles. An effective EPM program identifies and recognizes these factors and provides measures for coping with them.

The difficulty of locating replacement parts and the high cost due to limited availability make maintaining the old system inefficient and costly. The probability of failure will only worsen for the existing system, and therefore it is critical that corrective measures be taken as soon as possible to ensure personnel safety and electrical system reliability.

The IEEE Standard 493- 1980 table 11 states a summary of industry electrical equipment failure rates. Below is a list of components in the existing electrical system, and there associated failure rates on a per year basis:

Electrical Component	**Failure Rate (failures per unit-year)**	**Probability of Failure after 30 years**
Liquid Filled Transformers	0.0041 (.41%)	0.123 (12.3%)
Circuit Breakers	0.0176 (1.76%)	**0.528 (52.8%)**
Medium Voltage Cable	0.0141 (1.41%)	**0.423 (42.3%)**

This proposal is to upgrade the present 4,160 volt electrical radial feed system to a 12,470/7,200 volt loop feed system, Benefits of this upgrade fall into two categories: a) Direct measurable economic benefits are derived by reduced cost of repairs and reduced down time. b) Less measurable, but very real, benefits result from improved safety in the operation of the electrical system. Index 3 contains a drawing of the proposed loop feed system. Index 4 has technical information concerning the major proposed components.

This proposal is designed to provide the Fort Madison Penitentiary with these economic and safety related benefits. During the upgraded system commissioning, a base-line record will be established to be utilized as an ongoing maintenance program to enhance the system reliability through future preventive maintenance.

Due to the uncertainty of the physical location and power requirements of the 200 bed complex scheduled to be constructed in the year 2000, this proposal is budgetary and will require further cost analysis and engineering review upon acceptance.

The helpful assistance of the Fort Madison Penitentiary facilities staff was greatly appreciated in developing this proposal.

SCOPE

Company shall provide all supervision, labor, materials, equipment, and tools necessary to design and install a new 12,470/7,200 volt primary and 120/208 volt secondary distribution system for the Fort Madison State Penitentiary. The new system will replace the existing radial feed underground 4,160 volt three phase primary distribution system with a looped underground 12,470/7,200 volt three phase system. The main distribution panels inside existing buildings will be replaced or re-powered as detailed below. Company shall provide a list of contractors that can arrange for the disposal of the old transformers and switchgear that contain greater than 50 parts per million PCB's.

Equipment and services provided by Company as part of this Agreement include:

Primary Scope

1. Perform post-project power quality/quantity studies.
2. Provide independent acceptance testing of the generator, primary switchgear, transformers, cables, and grounding system.
3. Perform thermographic scan upon project completion, and at 3 and 12 month intervals after the completion date for a total of three (3) scans.
4. Provide CAD drawing of the electrical system in the form of a system one-line and area layout.
5. Furnish and install approximately 25,000 feet of 4/0, 15 KV aluminum underground cable. Each cable will be housed in two inch high density polyethylene underground conduit.
6. Relocate existing (12,470/7,200v:4160v) transformer of the following size to be used to step down the new primary system voltage and feed the chiller:

   - 2500 KVA Quantity 1 3 Phase Pad Mount

7. Furnish and install 5 (12,470/7,200v:480Y/277v) transformers of the following sizes:

   . 1500KVA Quantity 1 3 Phase Pad Mount
   . 750 KVA Quantity 1 3 Phase Pad Mount
   . 300KVA Quantity 3 3 Phase Pad Mount

8. Furnish and install 11 (12,470/7,200v:208/120v) transformers of the following sizes:

   - 1500 KVA Quantity 2 3 Phase Pad Mount
   - 500 KVA Quantity 2 3 Phase Pad Mount
   - 300 KVA Quantity 6 3 Phase Pad Mount
   - 150 KVA Quantity 1 3 Phase Pad Mount

9. Furnish and install 6 sectionalizers.
10. Furnish and install concrete pads or fiberglass basements for the placement of the transformers and electrical junction cabinets.
11. Furnish and install miscellaneous hardware, switches, and protective devices associated with the project.
12. Remove and dispose of old transformers and switchgear that are not PCB contaminated or PCB material.
13. Provide a list of contractors that can arrange for the removal and disposal of the old transformers and switchgear that are PCB contaminated or PCB material.
14. Backfill, grade and re-seed all excavations made by the Company or its agents.
15. Furnish and install new main secondary distribution panels and underground secondary cable as follows:

- *Powerhouse:* l-1200 AMP 3P/4W 277/480V new main distribution panel, new secondary conduit and feeder to new primary transformer. Re-feed existing loads with new feeders and conduit. l-600 AMP 3P/4W 277/480V new distribution sub-panel, re-feed loads with new feeders and conduit to existing panel and utilize as junction box.
- *Powerhouse:* l-400 AMP 3P/4W 120/208V new main distribution panel, new secondary conduit and feeder to new primary transformer. Re-feed existing loads with new feeders and conduit to existing panel and utilize as junction box.
- *Perimeter Wall Lighting:* l-400 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new primary transformer. Re-feed existing loads with new feeders and conduit to existing panel and utilize as junction box.
- *Visitors Center/Infirmary:* New secondary conduit and feeder from new primary transformer to existing 1600AMP 3P/4W 120/208V main distribution panel. Re-feed existing sub-panel EDP with new feeders and conduit.
- *Administration Building:* l-800 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new primary transformer. Re-feed existing loads with new feeders and conduit to new junction box installed in place of existing panel.
- *Cellhouse 218/318, 219, 319, 419, and 220:* l-4000 AMP 3P/4W 120/208V new double ended power distribution switchgear housed in an outdoor walk-in enclosure, new secondary conduit and feeders to 2 new primary transformers. Re-feed existing loads with new feeders and conduit as detailed below:
  - *Cellhouse 218/318:* l-600 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new outdoor walk-in switchgear. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.
  - *Cellhouse 219:* l-800 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new outdoor walk-in switchgear. Install new panel interior in existing panel. shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.
  - *Cellhouse* 319: l-800 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new outdoor walk-in switchgear. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.
  - *Cellhouse 419:* l-1200 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new outdoor walk-in switchgear. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.
  - *Cellhouse 220:* 2-225 AMP and 2-100 AMP 3P/4W 120/208V new distribution panels, new secondary conduit and feeders to cellhouse 419 and cellhouse 3 19 panels. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.

- *Old/New Upholstery Shops:* l-400 AMP 3P/4W 120/208V new distribution panel in Old Upholstery Shop, new secondary conduit and feeder to new primary transformer. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers. New secondary conduit and feeder from new primary transformer to existing 400AMP 3P/4W 120/208V main distribution panel in the New Upholstery Shop.
- *Bennet Dorm:* l-1000 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new primary transformer. Re-feed existing loads with new feeders and conduit to new junction box installed in place of existing panel.
- *School:* l-400 AMP 3P/4W 277/480V new main distribution panel, new secondary conduit and feeder to new primary transformer. Re-feed existing loads with new feeders and conduit to new junction box installed in place of existing panel.
- *School:* l-800 AMP 3P/4W 120/208V new main distribution panel, new secondary conduit and feeder to new primary transformer. Re-feed existing loads with new feeders and conduit to new junction box installed in place of existing panel.
- *Industries:* 1- 1600 AMP 3P/4W 277/480V new bus duct riser with main circuit breaker and bus taps for each floor. New secondary conduit and feeder to new primary transformer. New main distribution panels on each floor as detailed below:
  - 1st Floor – 400 AMP
  - 2nd Floor – 800 AMP
  - 3rd Floor – 600 AMP

  Re-feed loads with new feeders and conduit to existing panels and utilize as junction boxes.
- *Industries:* l-800 AMP 3P/4W 120/208V new bus duct riser with main circuit breaker and bus taps for each floor. New secondary conduit and feeder to new primary transformer. New main distribution panels on each floor as detailed below:
  - 2nd Floor – 600 AMP
  - 3rd Floor – 400 AMP

  Re-feed loads with new feeders and conduit to existing panels and utilize as junction boxes.
- *Kitchen:* l-400 AMP 3P/4W 277/480V new distribution panel, new secondary conduit and feeder to new primary transformer. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.
- *Kitchen:* l-1200 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new primary transformer. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.
- *Deputy Warden's Building (Building 51):* l-600 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new Kitchen transformer. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.
- *Laundry:* l-600 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to Kitchen 1200 AMP panel. Install new panel interior in existing panel shell if possible, due to limited space availability. Connect existing load circuits to new panel breakers.
- *Cellhouse 21 7:* New secondary conduit and feeder from new primary transformer to 5 new 3P/4W 120/208V distribution panels. Install new panel interiors in existing panel shells if possible, due to limited space availability. Connect existing load circuits to new panel breakers.

Option 1

1. Furnish and install two new 1250 KW, 277/480 volt diesel generators to perform full emergency backup capabilities for the entire facility, or to operate in a interruptible/peak shaving customer capacity. Generators will be housed in an outdoor walk around weatherproof and sound attenuated enclosure. Please refer to index 4 of this proposal for technical details. The generator set will include:

   - 2 each - Diesel Generator Sets
   - 2 each - Weatherproof Outdoor Walk Around Sound Attenuated IS0 Enclosure

2. Furnish and install new primary switchgear to enable interruptible/peak shaving customer capabilities. Switchgear will be housed in the existing Powerhouse Building. Please refer to index 4 of this proposal for technical details.
3. Furnish and install 2 (12,470/7,200v:480Y/277v) transformers of the following size:

   - 1500 KVA Quantity 2 3 Phase Pad Mount

TERMS AND CONDITIONS

- The estimated cost to perform the Primary Scope is **$4,945,384.40**. The estimated cost to perform the Option 1 Scope is **$974,749.30**. If Option 1 is declined, the Client will be required to provide the necessary Primary Switchgear or the Company's Primary Scope cost will require adjustment to include the design and procurement of Primary Switchgear.

- Due to the uncertainty of the physical location and power requirements of the 200 bed complex scheduled to be constructed in the year 2000, this proposal is budgetary and will require further cost analysis and engineering review upon acceptance. A formal contract will be provided at the State of Iowa's request.

- This proposal and the documents included with it contain proprietary materials which are confidential and privileged. This document and all attachments are intended solely for the use of the recipient identified. Any disclosure, duplication, dissemination or other use of this document and its attachments by anyone other than the identified recipient, or his/her agent, is strictly prohibited.

SUMMARY

This proposal provides an electrical system upgrade for your consideration. This project will be conducted by personnel experienced in the installation and operation of power systems.

We trust that in your review of this proposal you will find a program that makes sense and provides the highest value for your dollar by extending the mean time between failure rates, increasing personnel safety and ensuring optimum power reliability.

Sincerely,
Alliant Energy - IES Utilities Inc.

Nancy Eastburn
Major Account Manager

Sincerely,
Alliant Energy - IES Utilities Inc.

Sam Page
Key Account Manager

Photo #5 – Critical Perimeter Lighting Power Center with Leaking Transformer and Weathered Controls

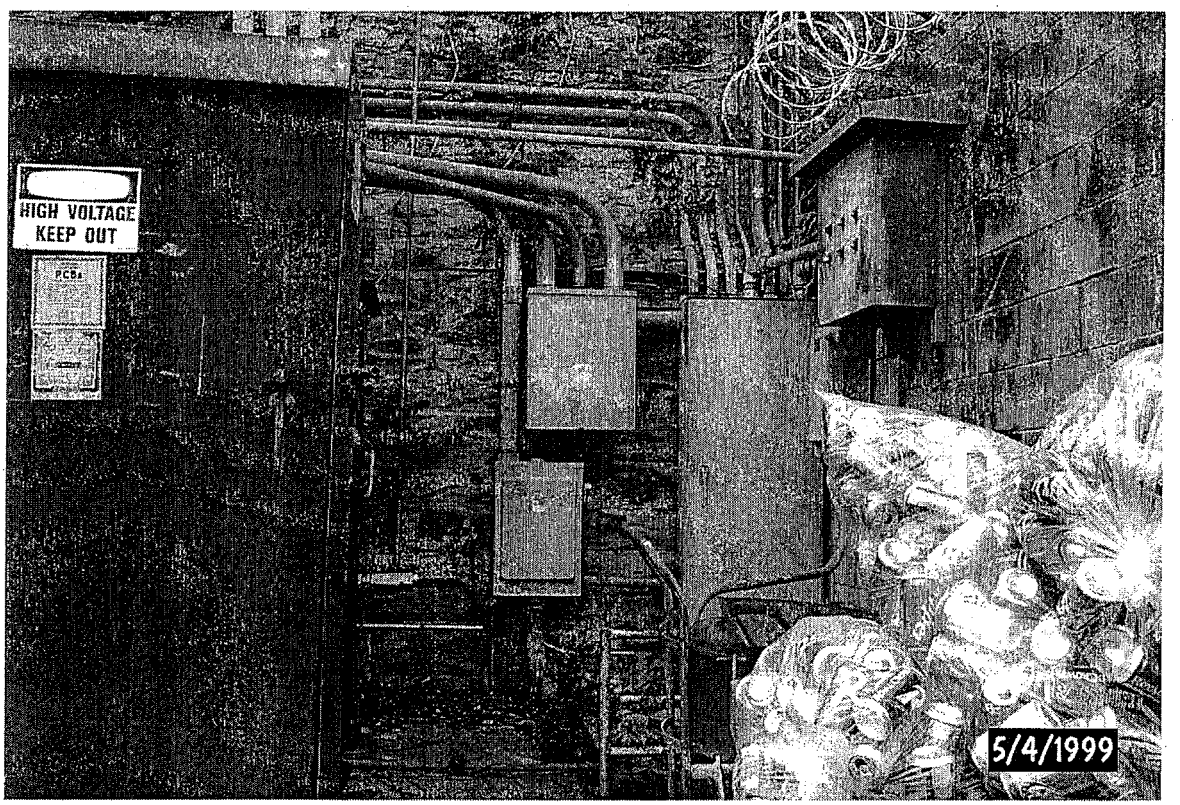


Photo #6 - Critical Perimeter Lighting Power Center with Possibly Unsafe Cut Circuits

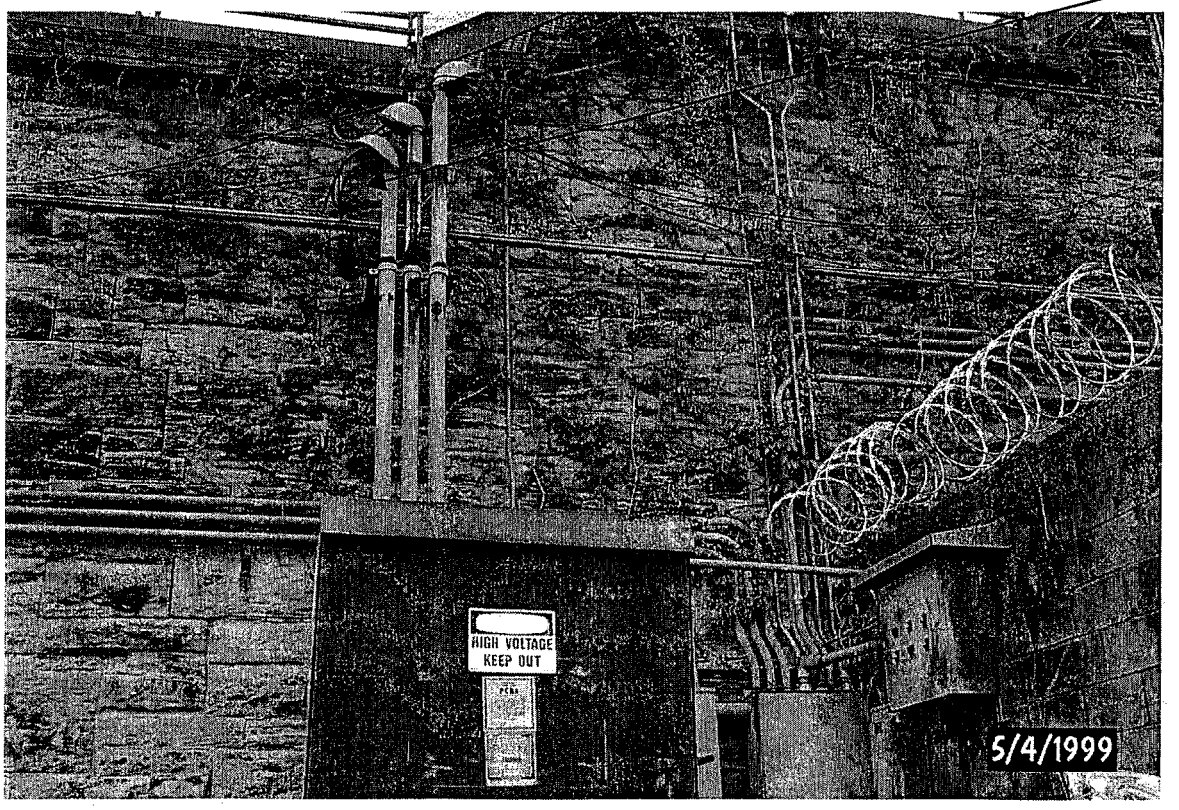


Photo #9 – Unsafe 208/120 Volt Panel and Transformer Being Used as Storage Shelf in Industries Building

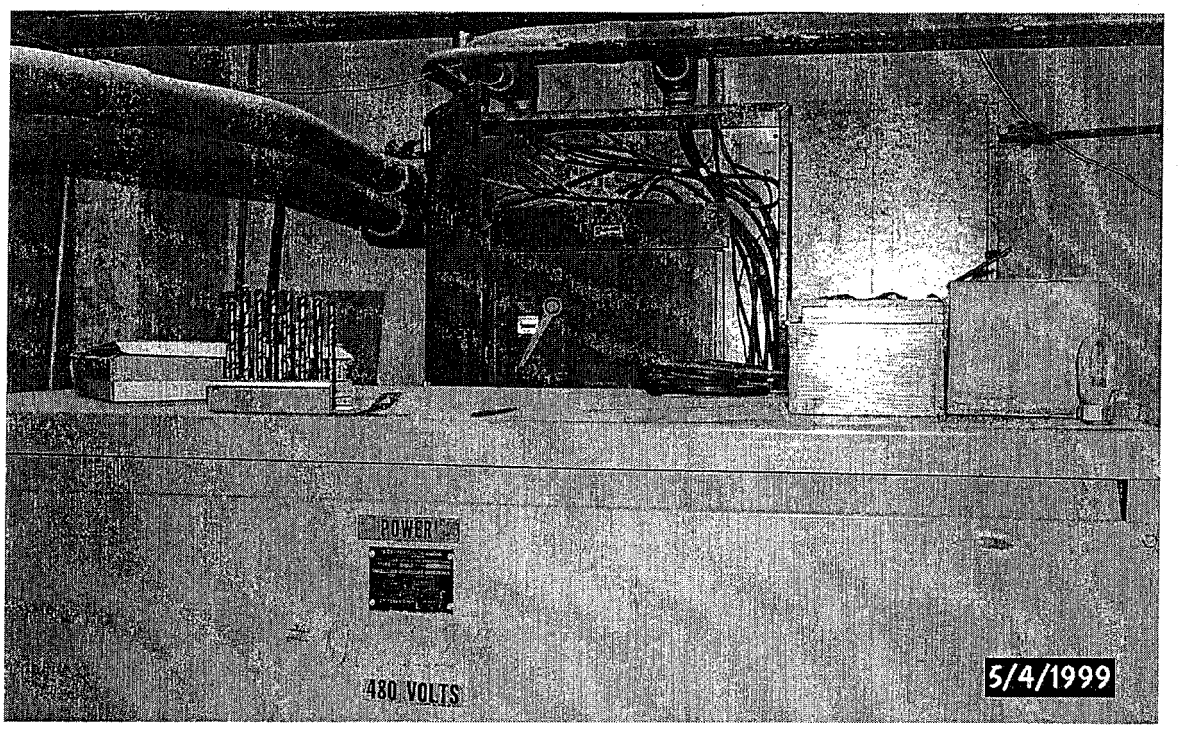
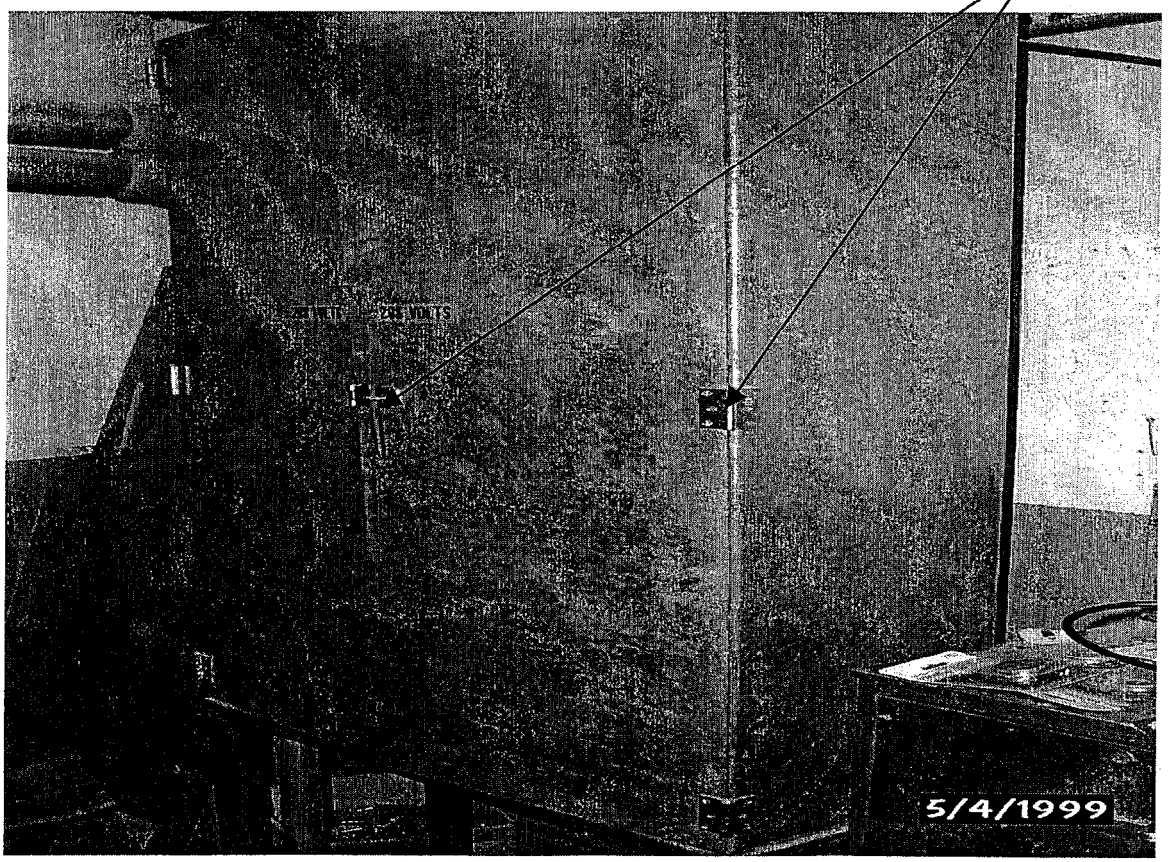


Photo #10 – Unsafe 208/120 Volt Panel in Industries Building



ALLIANT ENERGY.

Alliant Energy Corporation
1001 Shaver Road NE
Cedar Rapids, IA 52402-4501

Office: 319.398.1106
www.alliant-energy.com

November 24, 1999

Iowa Department of General Services
Hoover State Office Building
Des Moines, Iowa 503 19-0102

Attention: Mr. Craig Deichmann

Subject: Anamosa State Penitentiary Electrical System Upgrade.

PURPOSE

The existing electrical system was primarily installed in the mid-l 960's, making its' present age approximately 30 years. The majority of electrical-devices produced during that era have a service life between 20 to 25 years. The existing primary switchgear, which is the brains of the electrical system, is obsolete, unreliable, and poses a safety threat. The existing backup generation exports power at both 480 and 2400 volts, and due to transformer limitations the total available backup power cannot be fully utilized. The penitentiary load has outgrown the main utility supply transformer output capabilities during peak electrical usage periods. Several of the 600 volt secondary panels are obsolete and aged to the point that reliability and safety have been compromised. Please refer to section 4 of this report for photos which display the level of degradation and substantiate the need to upgrade the electrical system.

The difficulty of locating replacement parts and the high cost due to limited availability make maintaining the old system inefficient and costly. The probability of failure will only worsen for the existing system, and therefore it is critical that corrective measures be taken as soon as possible to ensure personnel safety and electrical system reliability.

The IEEE Standard 493-1980 table 11 states a summary of industry electrical equipment failure rates. Below is a list of components in the existing electrical system, and there associated failure rates on a per year basis:

Electrical Component	Failure Rate (failures per unit-year)	Probability of Failure after 30 years
Liquid Filled Transformers	0.0041 (.41%)	0.123 (12.3%)
Circuit Breakers	0.0176 (1.76%)	0.528 (52.8%)
Medium Voltage Cable	0.0141 (1.41%)	0.423 (42.3%)

This proposal is to upgrade the present 2,400 volt electrical radial feed system to a 12,470/7,200 volt loop feed system. Benefits of this upgrade fall into two categories: a) Direct measurable economic benefits are derived by reduced cost of repairs and reduced down time. b) Less measurable, but very real, benefits result from improved safety in the operation of the electrical system. Index 3 contains a drawing of the proposed loop feed system. Index 4 has technical information concerning the major proposed components.

This proposal is designed to provide the Anamosa State Penitentiary with these economic and safety related benefits. During the upgraded system commissioning, a base-line record will be established to be utilized as an ongoing maintenance program to enhance the system reliability through future preventive maintenance.

The helpful assistance of the Anamosa State Penitentiary facilities staff was greatly appreciated in developing this proposal.

SCOPE

Company shall provide all supervision, labor, materials, equipment, and tools necessary to design and install a new 12,470/7,200 volt primary and 120/208 volt secondary distribution system for the Anamosa State Penitentiary. The new system will replace the existing radial feed underground 2,400 volt three phase primary distribution system with a looped underground 12,470/7,200 volt three phase system. The main distribution panels inside existing buildings will be replaced or re-powered as detailed below.

Equipment and services provided by Company as part of this Agreement include:

Primary Scope

1. Perform post-project power quality/quantity studies.
2. Provide independent acceptance testing of the transformers, cables, and grounding system.
3. Perform thermographic scan upon project completion, and at 3 and 12 month intervals after the completion date for a total of three (3) scans.
4. Provide CAD drawing of the electrical system in the form of a system one-line and area layout.
5. Furnish and install approximately 28,950 feet of 4/0, 15 KV aluminum underground cable. Each cable will be housed in two inch high density polyethylene underground conduit.
6. Furnish and install 1 (34,500~ : 12,470Y/7,200v) transformer, with load tap changer, of the following size:

   - 3000 KVA Quantity 1 3 Phase Main Utility Transformer

7. Furnish and install 1 (12,470/7,200v:480Y/277v) transformer of the following size:

   . 500KVA Quantity 1 3 Phase Pad Mount

8. Furnish and install 10 (12,470/7,200v:208/120v) transformers of the following sizes:

   - 1500KVA -Quantity 2 3 Phase Pad Mount
   - 1000 KVA Quantity 4 3 Phase Pad Mount
   . 750KVA Quantity 2 3 Phase Pad Mount
   . 150KVA Quantity 2 3 Phase Pad Mount

9. Furnish and install 6 sectionalizers.
10. Furnish and install 2 grade level pull boxes.
11. Furnish and install concrete pads or fiberglass basements for the placement of the transformers and electrical junction cabinets.
12. Furnish and install miscellaneous hardware, switches, and protective devices associated with the project.
13. Remove and dispose of old transformers and switchgear that are not PCB contaminated or PCB material.
14. Backfill, grade and re-seed all excavations made by the Company or its agents.
15. Furnish and install new main secondary distribution panels and underground secondary cable as follows:

- *Powerhouse:* l-600 AMP 3P/4W 480V new main circuit breaker, new secondary conduit and feeder to new primary transformer. Re-feed existing 600 amp motor control center with new feeder and conduit from new main breaker.
- *Fresh Water Well Feeder:* New secondary conduit and feeder from new primary transformers to existing main distribution panels. Re-feed existing overhead to farm.
- *Warehouse and Compost Building:* New secondary conduit and feeder from new primary transformer to existing 200 and 225 amp main distribution panels. Re-feed existing lighting panel in Warehouse with new feeders and conduit from 225 amp main panel.
- *Barn:* l-225 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new primary transformer. Re-feed existing loads by using existing panel as junction box.
- *Substation* #I: l-3000 AMP 3P/4W 120/208V new double ended power distribution switchgear housed in an outdoor walk-in enclosure, new secondary conduit and feeders to 2 new primary transformers. Substation will have two 3000 amp main breakers, one 3000 amp tie breaker, and eight feeder breakers from 225 to 800 amps. Substation will be automated and equipped with remote centralized metering/controls capabilities. Re-feed existing loads with new feeders and conduit as detailed below:
  - *Autobody Shop:* New secondary conduit and feeder from new substation to existing 225 amp main distribution panel.
  - *Metal Stamp Building:* l-1200 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new substation. Connect existing load circuits to new panel breakers.
  - *Laundy:* New secondary conduit and feeder from new substation to existing 300 amp main distribution panel.
  - *Sign Shop:* New secondary conduit and feeder from new substation to existing 800 amp main distribution panel.
  - *License Plate Shop:* New secondary conduit and feeder from new substation to existing 800 amp main distribution panel.

- *Substation #2:* l-4000 AMP 3P/4W 120/208V new double ended power distribution switchgear housed in an outdoor walk-in enclosure, new secondary conduit and feeders to 2 new primary transformers. Substation will have two 4000 amp main breakers, one 4000 amp tie breaker, and nine feeder breakers from 400 to 1200 amps. Substation will be automated and equipped with remote centralized metering/controls capabilities. Re-feed existing loads with new feeders and conduit as detailed below:
  - *Infirmary:* New secondary conduit and feeder from new substation to existing 1200 amp main distribution panel.
  - *Administration:* New secondary conduit and feeder from new substation to existing 400 amp main distribution panel.
  - *Underground Vault:* New secondary conduit and feeders from new substation to two existing 1200 amp main distribution panels.
  - *Dietary:* New secondary conduit and feeder from new substation to existing 400 amp main distribution panel.
  - *Chillers:* New secondary conduit and feeders from new substation to one 800 amp and one 400 amp chiller main disconnect.
- *Substation #3:* l-2000 AMP 3P/4W 120/208V new double ended power distribution switchgear housed in an outdoor walk-in enclosure, new secondary conduit and feeders to 2 new primary transformers. Substation will have two 2000 amp main breakers, one 2000 amp tie breaker, and eight feeder breakers from 300 to 800 amps. Substation will be automated and equipped with remote centralized metering/controls capabilities. Re-feed existing loads with new feeders and conduit as detailed below:
  - *School & LUE:* New secondary conduit and feeder from new substation to existing 400 amp main distribution panel.
  - *LUB Pit:* l-800 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new substation. Connect existing load circuits to new panel breakers.
  - *Hobby Craft & Store:* New secondary conduit and feeder from new substation to two existing 200 amp main distribution panels.
  - *Maintenance Shop:* l-1200 AMP 3P/4W 120/208V new distribution panel, new secondary conduit and feeder to new substation. Connect existing load circuits to new panel breakers.
- *Substation #4:* l-3000 AMP 3P/4W 120/208V new double ended power distribution switchgear housed in an outdoor walk-in enclosure, new secondary conduit and feeders to 2 new primary transformers. Substation will have two 3000 amp main breakers, one 3000 amp tie breaker, and eight feeder breakers from 400 to 1600 amps. Substation will be automated and equipped with remote centralized metering/controls capabilities. Re-feed existing loads with new feeders and conduit as detailed below:
  - *Furniture Shop:* New secondary conduit and feeder from new substation to existing 400 and 800 amp main distribution panels.
  - *Panel SS:* New secondary conduit and feeder from new substation to existing 1600 amp main distribution panel.
  - *Panel MPD:* New secondary conduit and feeder from new substation to existing 800 amp main distribution panel.
  - *Chiller:* New secondary conduit and feeder from new substation to existing 800 amp main chiller disconnect.
  - *Outside Metal Building:* New secondary conduit and feeder from new substation to existing 400 amp main distribution panel.

Generation Option

1. Furnish and install two new 1250 KW, 277/480 volt diesel generators to perform full emergency backup capabilities for the entire facility, or to operate in a interruptible/peak shaving customer capacity. Each generator will be housed in an outdoor walk around weatherproof and sound attenuated enclosure. Please refer to index 4 of this proposal for technical details. The generator sets will include:

   - 2 each 1250 kW diesel generator sets
   - Weatherproof outdoor walk around sound attenuated enclosures
   - Inside weather-protective muffler enclosure

2. Furnish and install new primary switchgear to enable interruptible/peak shaving customer capabilities. Switchgear will be housed in walk-in outdoor weatherproof enclosure. Please refer to index 4 of this proposal for technical details.
3. Provide engineering, labor, and material to modify two existing 400 kW, 480 volt diesel generators. This modification will enable the 400 kW units to operate with the same controls and options as the two new 1250 kW units.
4. Provide independent acceptance testing of the generators, transformer, cables, and grounding system.
5. Furnish and install 2 (12,470/7,200v:480Y/277v) transformer of the following size:

   - 1500 KVA Quantity 1 3 Phase Pad Mount

6. Furnish and install 2 (12,470/7,200v:480Y/277v) transformer of the following size:

   - 500 KVA Quantity 1 3 Phase Pad Mount

TERMS AND CONDITIONS

- The estimated cost to perform the Primary Scope is **$3,973,700.00**. The estimated cost to perform the Generation Option is **$765,600.00**. If the Generation Option is declined, the Client will be required to provide the necessary Primary Switchgear or the Company's Primary Scope cost will require adjustment to include the design and procurement of Primary Switchgear.

- This proposal is budgetary and will require further cost analysis and engineering review upon acceptance. A formal contract will be provided at the State of Iowa's request.

- This proposal and the documents included with it contain proprietary materials which are confidential and privileged. This document and all attachments are intended solely for the use of the recipient identified. Any disclosure, duplication, dissemination or other use of this document and its attachments by anyone other than the identified recipient, or his/her agent, is strictly prohibited.

SUMMARY

This proposal provides an electrical system upgrade for your consideration. This project will be conducted by personnel experienced in the installation and operation of power systems.

We trust that in your review of this proposal you will find a program that makes sense and provides the highest value for your dollar by extending the mean time between failure rates, increasing personnel safety and ensuring optimum power reliability.

Sincerely,
Alliant Energy - IES Utilities Inc.

Craig Clefisch
Major Account Manager

Sincerely,
Alliant Energy - IES Utilities Inc.

Sam Page
Corporate Account Manager

Photo #1 – Inadequately Sized Primary 34,500:2,400 Volt Institution Transformer (Facility Load has Increased to Exceed Transformer Capacity During Peak Periods)

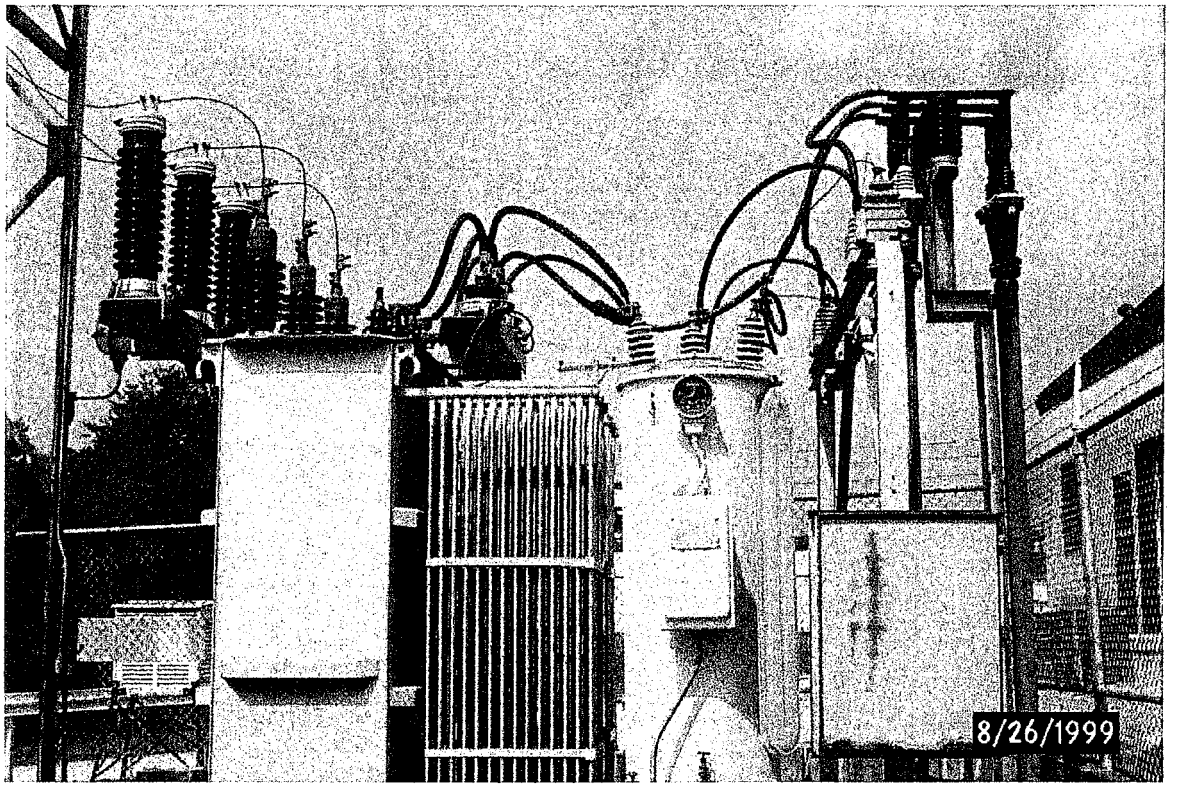


Photo #2 – Existing Primary Transformer 2400 Volt Output Bus – Weak and Vulnerable Point Due to Limited Space and Outdoor Exposure

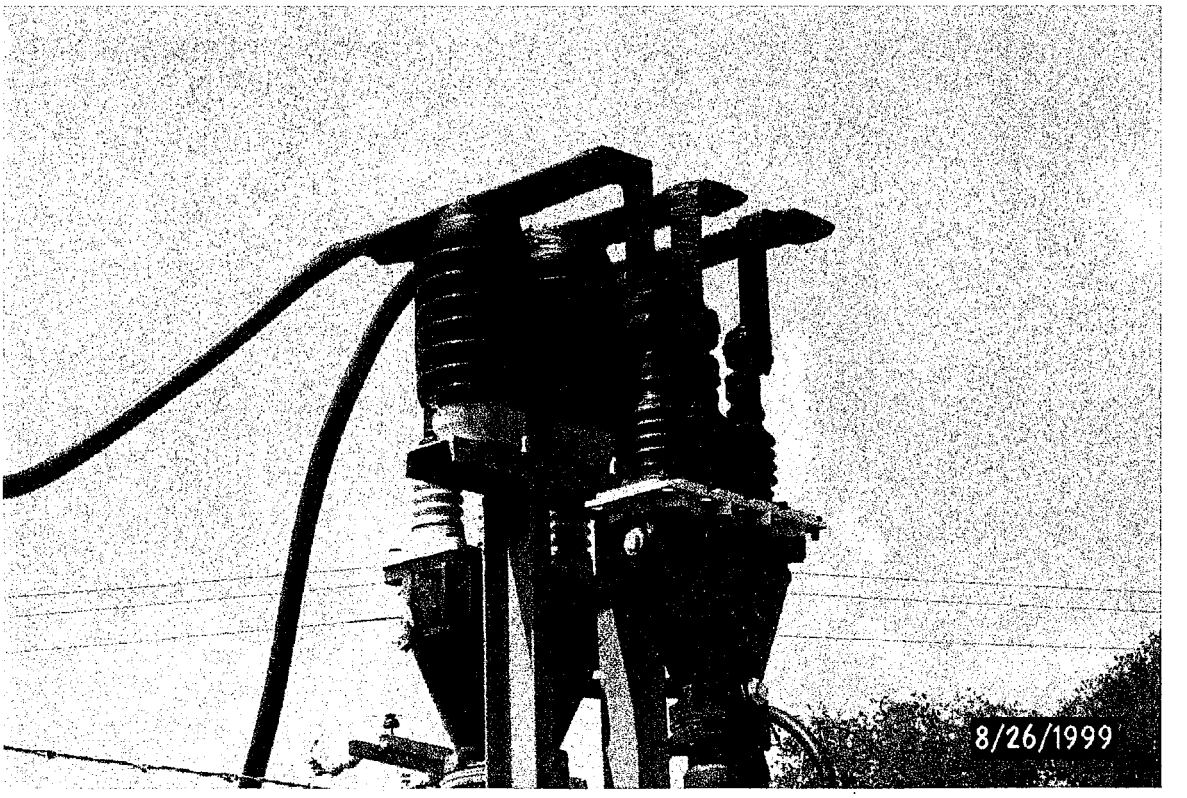


Photo #18 – Multiple Fuse Disconnects in License Plate Building – Several of the Switches are Obsolete (All of these will be Replaced with One New Panelboard in Proposed Upgrade)

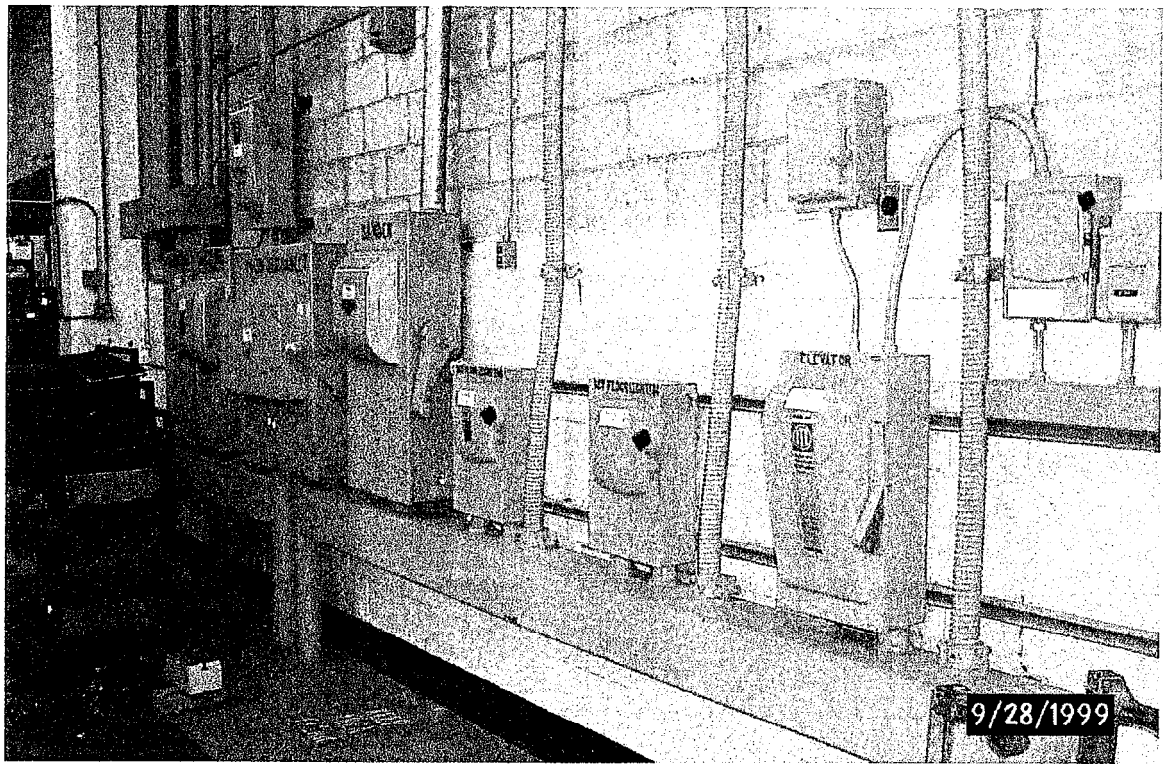
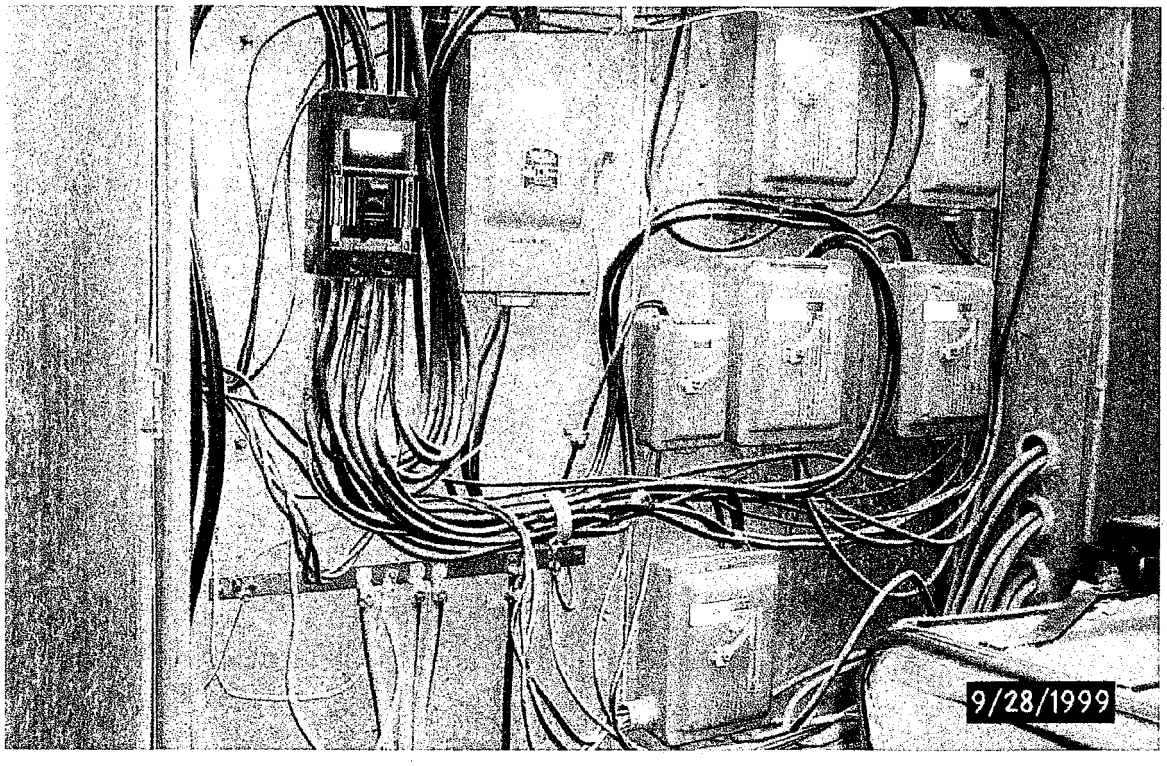


Photo #19 – Multiple Fuse Disconnects in Maintenance Building – Several of the Switches are Obsolete (All of these will be Replaced with One New Panelboard in Proposed Upgrade)



ALLIANT ENERGY.

Alliant Energy Corporation
1001 Shaver Road NE
Cedar Rapids, IA 52402-4501

Office: 319.398.1106
www.alliant-energy.com

November 24, 1999

Iowa Department of General Services
Hoover State Office Building
Des Moines, Iowa 50319-0102

Attention: Mr. Craig Deichmann

Subject: Iowa Medical & Classification Center Electrical System Upgrade – Oakdale, Iowa.

PURPOSE

Several factors reduce the reliability of a facility's electrical power system. As soon as equipment is installed, a process of normal deterioration begins. Unchecked, the deterioration process can cause equipment malfunction or an electrical failure. Deterioration can be accelerated by factors such as hostile environment , increased temperature or severe duty cycles. An effective EPM program identifies and recognizes these factors and provides measures for coping with them.

The existing electrical system was primarily installed in the mid-l 960's, making its' present age approximately 30 years. The heart of the present electrical system is located in the sub-basement area of the power plant. This area is difficult to physically access with construction or maintenance equipment, and has no elevator access. The difficulty of locating replacement parts and the high cost due to limited availability make maintaining the old system inefficient and costly. The increased probability of failure coupled with the access restricted location make it imperative that corrective measures be taken as soon as possible to ensure personnel safety and electrical system reliability. This proposal will replace all of the 15,000 volt equipment and relocate it to easily accessible locations outside of the security fence.

The IEEE Standard 493-1980 table 11 states a summary of industry electrical equipment failure rates. Below is a list of components in the existing electrical system, and there associated failure rates on a per year basis:

Electrical Component	Failure Rate (failures per unit-year)	Probability of Failure after 30 years
Liquid Filled Transformers	0.0041 (.41%)	0.123 (12.3%)
Dry Type Transformers	0.0036 (36%)	0.108 (10.8%)
Low Voltage Circuit Breakers	0.0052 (.52%)	0.156 (15.6%)
Medium Voltage Cable	0.0141 (1.41%)	0.423 (42.3%)

This proposal is to upgrade the present 12,470 volt electrical radial feed system to a 12,470/7,200 volt loop feed system. Benefits of this upgrade fall into two categories: a) Direct measurable economic benefits are derived by reduced cost of repairs and reduced down time. b) Less measurable, but very real, benefits result from improved safety in the operation of the electrical system. Index 3 contains a drawing of the proposed loop feed system. Index 4 has technical information concerning the major proposed components.

This proposal is designed to provide the Iowa Medical & Classification Center located in Oakdale, Iowa with these economic and safety related benefits. During the upgraded system commissioning, a base-line record will be established to be utilized as an ongoing maintenance program to enhance the system reliability through future preventive maintenance.

The helpful assistance of the Iowa Medical & Classification Center facilities staff was greatly appreciated in developing this proposal.

SCOPE

Company shall provide all supervision, labor, materials, equipment, and tools necessary to design and install a new 12,470/7,200 volt primary and 120/208 volt secondary distribution system for the Iowa Medical & Classification Center. The new system will replace the existing radial feed underground 12,470 volt three phase primary distribution system with a looped underground 12,470/7,200 volt three phase system. The main distribution panels inside existing buildings will be replaced or re-powered as detailed below.

Equipment and services provided by Company as part of this Agreement include:

Prima y Scope

1. Perform post-project power quality/quantity studies.
2. Provide independent acceptance testing of the transformers, cables, and grounding system.
3. Perform thermographic scan upon project completion, and at 3 and 12 month intervals after the completion date for a total of three (3) scans.
4. Provide CAD drawing of the electrical system in the form of a system one-line and area layout.
5. Furnish and install approximately 11,000 feet of 4/0, 15 KV aluminum underground cable. Each cable will be housed in two inch high density polyethylene underground conduit.
6. Furnish and install 1 (12,470/7,200v:480Y/277v) transformer of the following size:

   . *500* KVA Quantity 1 3 Phase Pad Mount

7. Furnish and install 4 (12,470/7,200v:208/120v) transformers of the following sizes:

   - 750 KVA Quantity 2 3 Phase Pad Mount
   - 300 KVA Quantity 1 3 Phase Pad Mount
   - 75KVA Quantity 1 3 Phase Pad Mount

8. Furnish and install concrete pads for the placement of the transformers.
9. Furnish and install 3 sectionalizers for the 12,470/7,200v system.
10. Furnish and install new primary service drop pole to connect to REC system.
11. Furnish and install miscellaneous hardware, switches, and protective devices associated with the project.
12. Backfill, grade and re-seed all excavations made by the Company or its agents.

13. Furnish and install new main secondary distribution panels and underground secondary cable as follows:

- *Water Plant:* l-600 AMP 3P/4W 480V new main circuit breaker, new secondary conduit and feeder to new primary transformer. Re-feed existing 600 amp motor control center with new feeder and conduit from new main breaker. Furnish and install three 600 amp current transformers in the new transformer or main circuit breaker for future connection into the facility management system.
- *Warehouse:* Re-feed existing secondary 200AMP 3P/4W 120/208V main distribution panel with new secondary feeders and conduit to new primary transformer. Furnish and install three 200 amp current transformers in the new transformer or main circuit breaker for future connection into the facility management system.
- *Administration Building:* l-2000 AMP 3P/4W 120/208V new main distribution panel, new secondary conduit and feeder from new primary transformer to building exterior, and new 2000 amp bus duct from building exterior to new panel. Re-feed existing loads by splicing into feeders, utilizing old 1200 amp panel as junction box. New panel will include a Square D PowerLogic meter with associated instrument transformers.
- *1984 and 1990 Additions:* Re-feed existing 2000 AMP 3P/4W 120/208V main circuit breaker with new secondary conduit and feeder from new primary transformer to building exterior, and new 2000 amp bus duct from building exterior to existing breaker. A new Square D PowerLogic meter with associated instrument transformers will be installed in the existing main breaker compartment and in the 1984 Addition electrical panel.
- *1992 Addition:* Re-feed existing secondary 800 AMP 3P/4W 120/208V main distribution panel with new secondary feeders and conduit to new primary transformer. Furnish and install three 800 amp current transformers in the new transformer or main circuit breaker for future connection into the facility management system.

Generation Option

1. Furnish and install two new 750 KW, 277/480 volt diesel generators to perform full emergency backup capabilities for the entire facility, or to operate in a interruptible/peak shaving customer capacity. Generator will be housed in an outdoor walk around weatherproof and sound attenuated enclosure. Please refer to index 4 of this proposal for technical details. The generator set will include:

- 2 each model 750 DFHA diesel generator sets
- Weatherproof outdoor walk around sound attenuated enclosures
- Inside weather-protective muffler enclosure

2. Furnish and install new primary switchgear to enable interruptible/peak shaving customer capabilities. Switchgear will be housed in walk-in outdoor weatherproof enclosure. Please refer to index 4 of this proposal for technical details.
3. Provide independent acceptance testing of the generators, transformer, cables, and grounding system.
4. Furnish and install 1 (12,470/7,200v:480Y/277v) transformer of the following size:

- 2000 KVA Quantity 1 3 Phase Pad Mount

TERMS AND CONDITIONS

- The estimated cost to perform the Primary Scope is **$920,700.00**. The estimated cost to perform the Generation Option Scope is **$818,300.00**. If the Generation Option is declined, the Client will be required to provide the necessary Primary Switchgear or the Company's Primary Scope cost will require adjustment to include the design and procurement of Primary Switchgear.

- Due to the uncertainty of the physical location and power requirements of the 100 bed complex scheduled to be constructed in the future, this proposal is budgetary and will require further cost analysis and engineering review upon acceptance. A formal contract will be provided at the State of Iowa's request.

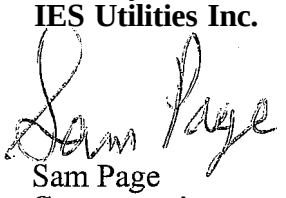
- This proposal and the documents included with it contain proprietary materials which are confidential and privileged. This document and all attachments are intended solely for the use of the recipient identified. Any disclosure, duplication, dissemination or other use of this document and its attachments by anyone other than the identified recipient, or his/her agent, is strictly prohibited.

SUMMARY

This proposal provides an electrical system upgrade for your consideration. This project will be conducted by personnel experienced in the installation and operation of power systems.

We trust that in your review of this proposal you will find a program that makes sense and provides the highest value for your dollar by extending the mean time between failure rates, increasing personnel safety and ensuring optimum power reliability.

Sincerely,
IES Utilities Inc.



Sam Page
Corporate Account Manager

Photo #1 - Obsolete Existing 15 kV Primary Switch and Step Down Dry Type Transformer Located in Sub-Basement of the Main Building (Installed in mid-1960's)

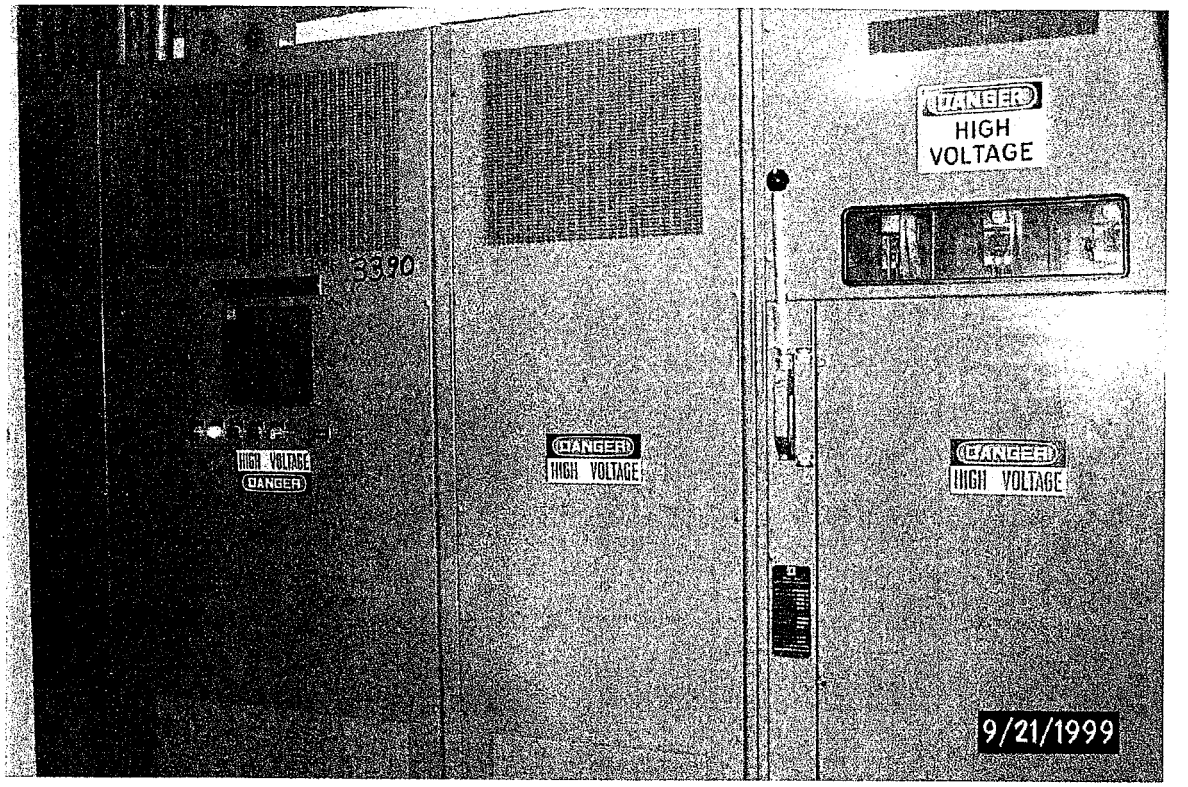


Photo #2 - Obsolete Existing 208/120 Volt Main Secondary Panel Located in Sub-Basement of the Main Building (Installed in mid-1960's)